



APPENDIX 6

Preliminary Ecological Assessment



Firebird Ecosultants Pty Ltd

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T: 02 49103939 E: sarah@firebirdeco.com.au

Date: 28 July 2015

Attention: Mark Maund
Senior Town Planner
de Witt Consulting Pty Ltd
PO Box 850
CHARLESTOWN NSW 2290

Dear Mark,

**RE: Preliminary Ecological Assessment – Lot 49 DP 707586 and
Lot 7 DP 240685, Doyalson**

Introduction

Firebird ecoSultants Pty Ltd has been engaged by de Witt Consulting Pty Ltd to undertake a preliminary ecological assessment over Lot 49 DP 707586 and Lot 7 DP 240685, Doyalson within the Wyong Local Government Area (referred to as the site).

Doyalson RSL Club Ltd owns land to the north of the Doyalson RSL Club and is seeking to rezone the land to allow for future development of a manufactured home estate on Lot 7 with a path for pedestrian access through the existing cleared area on Lot 49. Wyong Shire Council has requested a number of specialist studies as part of the planning proposal to accompany the request for a rezoning.

The objective of the planning proposal is to rezone land to amend the Wyong Local Environmental Plan 2013 (LEP) to rezone the site. The planning proposal seeks to rezone the site from RU6 Transition to RE2 Private Recreation. Lot 49 has been included in the proposal as it is intended to provide a pathway to local recreation from the manufactured home estate for residents.

The intended outcome of the proposal is to permit a future manufactured home estate to be developed. The site is approximately 21.5 hectares in size.

Methods and Scope of Study

To inform this preliminary ecological assessment the following field surveys and desktop-based assessments were undertaken:



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- A brief diurnal and nocturnal site inspection of the land was undertaken on 9 July 2015 to confirm the vegetation, threatened species and habitat values of the property.

Approximately 4 hours were spent on site undertaken random meander flora surveys and obtaining incidental observations of fauna and habitat values;

- Collation and review of existing ecological data on the site (e.g. database searches such Atlas of NSW Wildlife (BioNET) and Wyong Shire Council vegetation mapping);
- Consideration of relevant ecological survey and assessment policy guidelines;
- Description of the biodiversity values of the land and initial assessment of the potential impacts on native vegetation and threatened species as a result of the proposed development; and
- Identification of the biodiversity constraints / opportunities.

This main purpose of this preliminary ecological assessment is to support the preparation of a planning proposal to Wyong Shire Council and to provide a sufficient level of ecological information to support an initial gateway determination by the Department of Planning and Environment.

Flora

The site contains areas of native vegetation, which according to vegetation survey and mapping undertaken for Wyong Shire Council by Bell (2002) mainly consists of Narrabeen Doyalson Coastal Woodland (Map Unit 31). To the east of the site areas of Narrabeen Impeded Wet Heath (Map Unit 23) have also been mapped by Bell (2002).

The initial field survey tentatively identified the following vegetation communities as occurring on the site:

- Narrabeen Doyalson Coastal Woodland (Map Unit 31). Approximately 5 hectares of this community occurs on site, mainly within Lot 49.
- Narrabeen Impeded Wet Heath (Map Unit 23) / Narrabeen Doyalson Coastal Woodland (ecotone). Approximately 1.7 hectares of this community occurs on site, mainly within Lot 49.
- *Acacia longifolia* scrub (regenerating). Approximately 0.34 hectares of this community occurs within Lot 7.



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- *Eucalyptus saligna* trees. Approximately 0.16 hectares of this community occurs within Lot 7.
 - Pine Plantation. Approximately 0.85 hectares of this exotic planted community occurs within Lot 7.

The extent and distribution of these vegetation communities is shown in Figure 1-1. Large parts of the site, particularly within Lot 7, are also cleared of native vegetation and are currently used for rural, sporting and recreational uses.

Bell (2002) states that the Narrabeen Doyalson Coastal Woodland occurs principally on the Doyalson and Gorokan soil landscapes in the northern parts of the Wyong Shire and that ecotonal areas between Map Unit 31 and the Narrabeen Impeded Wet Heath (Unit 23) commonly occur, and follow a drainage gradient such that species typical of that community may occur under a woodland canopy.

The dominant naturally occurring vegetation communities on the site, being Narrabeen Doyalson Coastal Woodland and Narrabeen Impeded Wet Heath (ecotone) are not commensurate with any endangered ecological communities (EECs) listed under the Threatened Species Conservation Act 1995 (TSC Act).

The small occurrence of *Eucalyptus saligna* trees in association with *Melaleuca styphellioides* may require further consideration to determine whether these trees are remnants of a naturally occurring community. Small patches of wetter vegetation containing *Typha orientalis* and *Baumea articulata* were also found within Lot 49 and require further delineation. Several small dams and waterbodies also occur within the site.

There are no records of threatened flora species on the Atlas of NSW Wildlife from the site itself or immediately adjacent areas. However, within 1-2 kilometres of the site there are records of Bynoe's Wattle (*Acacia bynoeana*), Charmhaven Apple (*Angophora inopina*), Leafless Tongue Orchid (*Cryptostylis hunteriana*) and Black-eyed Susan (*Tetratheca juncea*). Areas of potential habitat occur for these species on the site, particularly within the Narrabeen Doyalson Coastal Woodland and Narrabeen Impeded Wet Heath ecotonal communities.

A number of exotic planted trees and weeds such as Slash Pine (*Pinus elliottii*) and Lantana (*Lantana camara*) are prevalent in parts of the site. Photographs of the vegetation and habitat values of the site are provided below. Flora species recorded during the initial site inspection are provided in Appendix A.



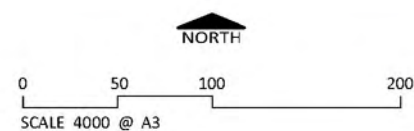
FIGURE 1-1: VEGETATION MAP

CLIENT
SITE DETAILS
DATE

Dewitt Consulting
No.100 & 110 Pacific Highway Doyalson
27 July 2015

Legend

- Subject Site
- 140m Buffer



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**Photograph 1: Narrabeen
Impeded Wet Heath**



Photograph 2: Pine plantation



**Photograph 3: Cleared parts of
the site**



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Photograph 4: Remnant scattered Scribbly Gums

Fauna and Habitat Assessment

Due to the existing recreational / rural land uses and other factors such as the adjacent sporting fields, RSL club and Pacific Highway, the site contains relatively limited habitat values. Fauna species recorded during the initial site inspection are provided in Appendix A, and mainly consisted of common widespread species that occur in partially vegetated landscapes.

Large parts of the site are cleared of native vegetation and contain grassed paddocks or areas of physical ground disturbance. Areas of native vegetation occur on the site, mainly within Lot 49 and at the eastern extremity of Lot 7. This vegetation is continuous with larger areas of remnant native vegetation within the Doyalson and Colongra localities. Vegetation to the east of the site is a combination of lands zoned SP2 Infrastructure, E3 Environmental Management and E2 Environmental Conservation under the Wyong LEP 2013. Colongra Swamp Nature Reserve occurs approximately 2km to the south east.

There are some tenuous vegetation links further west across the Pacific Highway to lands zoned SP2 Infrastructure (Electricity Generating Works). A review of the Office of Environment and Heritage's (OEH) key habitats and corridors mapping (Scotts, 2003) also shows that the site and surrounding areas are also located in the 'Wyee Road' regional wildlife corridor.

A number of mature and hollow-bearing trees were found to occur on the site during the initial site inspection, including within proximity to the Pacific Highway. The



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vegetation in Lot 49 contains a dense understorey in parts and habitat features such as fallen logs and several hollow-bearing trees. The site contains the headwaters of a small tributary draining into Colongra Lake and several small dams and waterbodies also occur. These features collectively provide habitat for a number of forest birds, terrestrial/arboreal mammals, frogs and reptiles.

There are no records of threatened fauna species on the Atlas of NSW Wildlife from the site itself or immediately adjacent areas. However, within 2 kilometres of the site there are records of Varied Sittella, Little Lorikeet, Swift Parrot, Superb Fruit-Dove, Wallum Froglet, Squirrel Glider, Spotted-tailed Quoll, Grey-headed Flying-fox, Eastern Freetail-bat, Little Bentwing-bat, Eastern Bentwing-bat, Southern Myotis and Greater Broad-nosed Bat. Some areas of potential habitat for these species occur within the site. The majority of these potentially occurring threatened forest fauna species have relatively large home ranges and the site would only constitute a small percentage of habitat needed to sustain populations within the locality.

If the planning proposal is approved by the 'gateway', then further surveys and assessments can be undertaken to confirm the presence or otherwise of threatened flora and fauna species and to obtain a greater understanding of the habitat values of the site.

Biodiversity Constraints and Assessment

The 21.5 hectare site contains approximately 7.2 hectares of native vegetation, including Narrabeen Doyalson Coastal Woodland and Narrabeen Impeded Wet Heath communities. Native vegetation occurs mainly within Lot 49 and at the eastern extremity of Lot 7. This vegetation is relatively continuous with larger areas of remnant native vegetation within the Doyalson and Colongra localities, is part of an identified wildlife corridor and contains habitat features such as mature and hollow-bearing trees. This vegetation also provides some areas of potential habitat for threatened flora species such as *Acacia bynoeana*, *Angophora inopina*, *Cryptostylis hunteriana*, *Tetralthea juncea* and threatened forest fauna species such as the Squirrel Glider and various micro-bats. It is considered that these features provide the primary biodiversity constraints to the proposed urban development of the land.

As the development is proposed to be located within the predominantly cleared areas of Lot 7 DP 240685, the biodiversity impacts associated with the rezoning and subsequent residential development of the land would be expected to be relatively minor and unlikely to significantly affect threatened species, endangered ecological



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communities, or their habitats. Any potential removal of native vegetation on the site would result in the minor incremental loss of biodiversity values within the wider locality.

However, should a decision be made at the 'gateway' to proceed with the preparation of a planning proposal, then further ecological studies could be undertaken post-gateway approval to determine the vegetation communities present on the site, extent of habitat features such as hollow-bearing trees and the likely presence of threatened species habitats. The report should provide a more detailed impact assessment and provide further recommendations to ensure that the rezoning and development of the land minimises any potential impacts on the environment.

The additional ecological surveys and assessments can be undertaken to ensure compliance with Wyong Shire Council policies and guidelines, and any other study requirements requested by the Department of Planning & Environment and/or Office of Environment & Heritage as part of the gateway determination / consultation process.

It is also recommended that further consultation with staff from Wyong Shire Council is undertaken regarding the extent of avoidance, mitigation and offset measures which may be required to support the planning proposal. It is noted that there may be some opportunities to retain vegetation and areas of higher biodiversity value within Lot 49. This vegetation would also benefit from active conservation management, including the control of weeds.

The retention and management of native vegetation on the site, particularly within Lot 49, would ensure that the viability of the wildlife corridor identified by OEH is maintained and provide for a potential improvement in biodiversity values as part of the planning proposal.



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Yours faithfully

Firebird EcoSultants Pty Ltd

Sarah Jones

B.Env.Sc., G.DIP.DBPA (Design for Bushfire Prone Areas)

Ecologist / Bushfire Planner

Bibliography

Bell, S.A.J. (2002) The natural vegetation of the Wyong Local Government Area, Central Coast, New South Wales: Technical Report. Unpublished Final Report to Wyong Shire Council, August 2002. Eastcoast Flora Survey.

Bell, S.A.J. (2002) The natural vegetation of the Wyong Local Government Area, Central Coast, New South Wales: Vegetation Community Profiles. Unpublished Final Report to Wyong Shire Council, December 2002. Eastcoast Flora Survey.

Scotts, D. (2003) Key habitats and corridors for forest fauna: A landscape framework for conservation in north-east New South Wales. NSW NPWS Occasional Paper 32, NSW National Parks and Wildlife Service, Sydney.



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APPENDIX A: RECORDED SPECIES LISTS

FLORA

CLASS PTERIDOPSIDA (Ferns)

ADIANTACEAE

Adiantum aethiopicum Common Maidenhair

Cheilanthes sieberi subsp. sieberi Rock Fern

Pellaea falcata Sickie Fern

CYATHEACEAE

Cyathea spp. Tree Fern

DENNSTAEDTIACEAE

Hypolepis muelleri Harsh Ground Fern

Pteridium esculentum Bracken

DICKSONIACEAE

Calochlaena dubia Rainbow Fern

GLEICHENIACEAE

Gleichenia dicarpa Pouched Coral Fern

CLASS PINOPSIDA (Conifers)

PINACEAE

*Pinus elliottii** Slash Pine

CLASS MAGNOLIOPSIDA (Flowering Plants)

ALTINGIACEAE

Liquidambar spp. Sweetgum

AMARANTHACEAE

Alternanthera denticulata Lesser Joyweed

APIACEAE

Centella asiatica Indian Pennywort

*Hydrocotyle bonariensis** American Pennywort

APOCYNACEAE

Parsonsia straminea Common Silkpod

ASPARAGACEAE

*Asparagus aethiopicus** Asparagus Fern

ASTERACEAE

*Ageratina adenophora** Crofton Weed



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<i>Bidens pilosa</i> *	Cobblers Peg
<i>Chrysanthemoides monilifera</i> subsp. <i>rotundata</i> *	Bitou Bush
<i>Conyza sumatrensis</i> *	Tall Fleabane
<i>Hypochaeris radicata</i> *	Catsear
<i>Senecio madagascariensis</i> *	Fireweed
<i>Sonchus oleraceus</i> *	Common Sowthistle
AZOLLACEAE	
<i>Azolla pinnata</i>	Water Velvet
CACTACEAE	
<i>Opuntia stricta</i> *	Prickly Pear
CANNACEAE	
<i>Canna indica</i> *	Tous-les-mois Arrowroot
CASUARINACEAE	
<i>Allocasuarina littoralis</i>	Black She-oak
<i>Allocasuarina torulosa</i>	Forest Oak
COMMELINACEAE	
<i>Commelina cyanea</i>	Native Wandering Jew
CONVOLVULACEAE	
<i>Dichondra repens</i>	Kidney Weed
<i>Ipomoea cairica</i> *	Morning Glory
<i>Ipomoea indica</i> *	Morning Glroy
CRASSULACEAE	
<i>Bryophyllum delagoense</i> *	Mother of Millions
CYPERACEAE	
<i>Baumea articulata</i>	Jointed Twig-rush
<i>Baumea juncea</i>	Bare Twig-rush
<i>Cyperus congestus</i> *	Dense Flatsedge
<i>Cyperus polystachyos</i>	Many-spiked Flatsedge
<i>Gahnia clarkei</i>	Tall Saw-sedge
<i>Gahnia sieberiana</i>	Red-fruit Saw-sedge
<i>Lepidosperma laterale</i>	Variable Sword-sedge
<i>Ptilothrix deusta</i>	Ptilothrix
<i>Schoenus brevifolius</i>	Spikey Sedge
EUPHORBIACEAE	
<i>Ricinus communis</i> *	Castor Oil Plant
FABACEAE - Subfamily Faboideae	



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<i>Hardenbergia violacea</i>	False Sarsaparilla
<i>Pultenaea daphnoides</i>	Large-leaf Bush-pea
<i>Trifolium repens</i> *	White Clover
<i>Vicia sativa</i> subsp. <i>sativa</i> *	Common Vetch
FABACEAE - Subfamily Mimosoideae	
<i>Acacia irrorata</i>	Green Wattle
<i>Acacia longifolia</i> subsp. <i>longifolia</i>	Sydney Golden Wattle
<i>Acacia longifolia</i> subsp. <i>sophorae</i>	Coastal Wattle
<i>Acacia podalyriifolia</i>	Queensland Silver Wattle
<i>Acacia prominens</i>	Gosford Wattle
GERANIACEAE	
<i>Geranium homeanum</i>	Native Geranium
GOODENIACEAE	
<i>Dampiera stricta</i>	Blue Dampiera
IRIDACEAE	
<i>Watsonia meriana</i> *	Wild Watsonia
JUNCACEAE	
<i>Juncus continuus</i>	Sand Rush
<i>Juncus planifolius</i>	Broad-leaved Rush
<i>Juncus usitatus</i>	Common Rush
LAURACEAE	
<i>Cassytha glabella</i>	Devils Twine
<i>Cinnamomum camphora</i> *	Camphor Laurel
LOMANDRACEAE	
<i>Lomandra longifolia</i>	Spikey-headed Mat-rush
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	Wattle Mat-rush
<i>Lomandra obliqua</i>	Fish Bones
LORANTHACEAE	
<i>Amyema congener</i> subsp. <i>congener</i>	Mistletoe
MALVACEAE	
<i>Brachychiton acerifolius</i>	Illawarra Flame Tree
<i>Sida rhombifolia</i> *	Paddy's Lucerne
MENYANTHACEAE	
<i>Villarsia exaltata</i>	Yellow Marsh Flower
MYRTACEAE	
<i>Backhousia myrtifolia</i>	Grey Myrtle



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<i>Callistemon citrinus</i>	Crimson Bottlebrush
<i>Callistemon linearis</i>	Narrow-leaved Bottlebrush
<i>Corymbia gummifera</i>	Red Bloodwood
<i>Corymbia maculata</i>	Spotted Gum
<i>Eucalyptus haemastoma</i>	Broad-leaved Scribbly Gum
<i>Eucalyptus saligna</i>	Sydney Blue Gum
<i>Eucalyptus signata</i>	Scribbly Gum
<i>Kunzea ambigua</i>	Tick Bush
<i>Leptospermum trinervium</i>	Slender Tea-tree
<i>Melaleuca ericifolia</i>	Swamp Paperbark
<i>Melaleuca quinquenervia</i>	Broad-leaved Paperbark
<i>Melaleuca sieberi</i>	Sieber's Paperbark
<i>Melaleuca styphelioides</i>	Prickly-leaved Paperbark
<i>Melaleuca thymifolia</i>	Thyme Honey-myrtle
OCHNACEAE	
<i>Ochna serrulata*</i>	Mickey Mouse Plant
OLEACEAE	
<i>Ligustrum sinense*</i>	Small-leaved Privet
ORCHIDACEAE	
<i>Cymbidium suave</i>	Snake Orchid
<i>Glochidion ferdinandi</i>	Cheese Tree
PHYTOLACCACEAE	
<i>Phytolacca octandra*</i>	Inkweed
<i>Pittosporum undulatum</i>	Sweet Pittosporum
PLANTAGINACEAE	
<i>Plantago lanceolata*</i>	Lamb's Tongues
POACEAE	
<i>Axonopus fissifolius*</i>	Narrow-leafed Carpet Grass
<i>Chloris gayana*</i>	Rhodes Grass
<i>Cortaderia selloana*</i>	Pampas Grass
<i>Cynodon dactylon</i>	Common Couch
<i>Echinopogon caespitosus</i>	Bushy Hedgehog Grass
<i>Echinopogon ovatus</i>	Forest Hedgehog Grass
<i>Ehrharta erecta*</i>	Panic Veldt Grass
<i>Ehrharta longiflora*</i>	Annual Veldt Grass
<i>Eragrostis brownii</i>	Brown's Lovegrass



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<i>Microlaena stipoides</i>	Weeping Grass
<i>Oplismenus aemulus</i>	Basket Grass
<i>Panicum simile</i>	Two-colour Panic
<i>Paspalum urvillei</i> *	Vasey Grass
<i>Setaria parviflora</i> *	Pigeon Grass
<i>Setaria sphacelata</i> *	South African Pigeon Grass
<i>Sporobolus africanus</i> *	Parramatta Grass
<i>Themeda australis</i>	Kangaroo Grass
<i>Polygala myrtifolia</i> *	Mytle-leaf Milkwort
POLYGONACEAE	
<i>Acetosa sagittata</i> *	Rambling Dock
<i>Persicaria lapathifolia</i>	Pale Knotweed
<i>Rumex crispus</i> *	Curly Dock
PONTEDERIACEAE	
<i>Eichhornia azurea</i> *	Anchored Water Hyacinth
<i>Banksia oblongifolia</i>	Fern-leaved Banksia
<i>Banksia spinulosa</i>	Hairpin Banksia
<i>Isopogon anemonifolius</i>	Broad-leaf Drumsticks
<i>Lambertia formosa</i>	Mountain Devil
<i>Persoonia lanceolata</i>	Lance Leaf Geebung
<i>Persoonia levis</i>	Broad-leaved Geebung
ROSACEAE	
<i>Rubus fruticosus</i> sp. agg.*	Blackberry
SOLANACEAE	
<i>Solanum nigrum</i> *	Black-berry Nightshade
TROPAEOLACEAE	
<i>Tropaeolum majus</i> *	Nasturtium
TYPHACEAE	
<i>Typha orientalis</i>	Bullrush
VERBENACEAE	
<i>Lantana camara</i> *	Lantana
<i>Verbena bonariensis</i> *	Purpletop

* Denotes non-endemic/ introduced species



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FAUNA

BIRDS

Anthochaera chrysoptera

Chenonetta jubata

Colluricincla harmonica

Corvus coronoides

Cracticus nigrogularis

Cracticus tibicen

Dacelo novaeguineae

Eolophus roseicapillus

Grallina cyanoleuca

Haliaeetus leucogaster

Malurus cyaneus

Manorina melanocephala

Neochmia temporalis

Ocyphaps lophotes

Platycercus eximius

Rhipidura albiscapa

Rhipidura leucophrys

Strepera graculina

Trichoglossus haematodus

Vanellus miles

Little Wattlebird

Australian Wood Duck

Grey Shrike-thrush

Australian Raven

Pied Butcherbird

Australian Magpie

Laughing Kookaburra

Galah

Magpie-lark

White-bellied Sea-Eagle

Superb Fairy-wren

Noisy Miner

Red-browed Finch

Crested Pigeon

Eastern Rosella

Grey Fantail

Willie Wagtail

Pied Currawong

Rainbow Lorikeet

Masked Lapwing

MAMMALS

Wallabia bicolor

Swamp Wallaby

AMPHIBIANS

Crinia signifera

Litoria peronii

Litoria verreauxii

Common Eastern Froglet

Peron's Tree Frog

Verreaux's Frog

FISH

*Gambusia holbrooki**

Mosquito Fish

* Denotes non-endemic/ introduced species



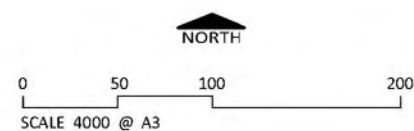
FIGURE 2-1: PROPOSED DEVELOPMENT MAP

CLIENT
SITE DETAILS
DATE

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No.100 & 110 Pacific Highway Doyalson
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Legend

- Subject Site
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